

What is claimed is:

1. A power converter arranged in series with a motor to form a unitary structure through which an output shaft extends, comprising:
 - a plurality of coolers each of which is disposed along an extending direction
 - 5 radially extending from an output shaft to be perpendicular to the output shaft, with each of the plurality of coolers having a cooling surface along the extending direction; and
 - a power semiconductor module mounted on the cooling surface of at least one of the plurality of coolers to supply electric power to a motor.
- 10 2. The power converter according to claim 1, wherein the output shaft includes at least one of a motor shaft and a drive shaft connected to the motor shaft.
3. The power converter according to claim 1, wherein each of the plurality of coolers includes a plurality of cooling surfaces, and each of the plurality of cooling surfaces is arranged along the extending direction of corresponding
- 15 one of the plurality of coolers.
4. The power converter according to claim 1, wherein each of the plurality of coolers includes a set of coolers opposing to one another, and each of the set of coolers extends along an extending direction radially extending from the output shaft to be perpendicular to the output shaft.
- 20 5. The power converter according to claim 1, wherein each of the plurality of coolers is mounted on a cylindrical structural member surrounding the output shaft.
6. The power converter according to claim 1, wherein each of the plurality of coolers is mounted on a structural member located at an end face of a motor.
- 25 7. The power converter according to claim 1, wherein each of the plurality of coolers includes a plurality of coolant passageways that extend in parallel to the output shaft.
8. The power converter according to claim 1, wherein each of the plurality of coolers includes a plurality of coolant passageways that extend along the
- 30 extending direction of corresponding one of the plurality of coolers.

9. The power converter according to claim 1, wherein an end portion of each of the plurality of coolers is connected to at least one of a delivery conduit communicating with coolant passages of the other of the plurality of coolers and a coolant delivery conduit communicating with a power converter.
- 5 10. The power converter according to claim 1, wherein an end portion of each of the plurality of coolers is connected to an annular coolant passage connected to the coolant delivery conduit connected to a power converter.
11. The power converter according to claim 1, further comprising a capacitor disposed between respective ones of the plurality of coolers adapted to smooth
10 a DC voltage.
12. The power converter according to claim 11, wherein the capacitor has a cross sectional shape formed in a fan-shape or a trapezoid.
13. The power converter according to claim 1, wherein each of the plurality of coolers has a pair of cooling surfaces, on each of which the power
15 semiconductor module is mounted, and terminals of the power semiconductor module mounted on one of the pair of cooling surfaces has a symmetric relationship with those on the other of the cooling surfaces with respect to corresponding one of the plurality of coolers.
14. The power converter according to claim 1, further comprising a current
20 sensor disposed in a corner section projecting from a cross sectional circular shape of a power converter and detecting output currents of the power semiconductor module.
15. The power converter according to claim 1, further comprising an AC output terminal disposed in a corner section projecting from a cross sectional
25 circular shape of a power converter and connecting a power converter and a motor.
16. The power converter according to claim 15, wherein the AC output terminal is three-phase AC output terminal and have three output terminals, and each of the three output terminals is disposed in corresponding one of
30 three corner sections projecting from the cross sectional circular shape of the

power converter.

17. The power converter according to claim 1, further comprising a DC power input terminal disposed in a corner section, projecting from a cross sectional circular shape of a power converter, in which no other component elements are
5 located.

18. A method of arranging a cooler and a power semiconductor module in a power converter to be formed in series with a motor in a unitary structure through which an output shaft extends, the method comprising:

10 locating a plurality of coolers along an extending direction radially extending from an output shaft to be perpendicular to the output shaft, with each of the plurality of coolers having a cooling surface along the extending direction; and

mounting a power semiconductor module on the cooling surface of at least one of the plurality of coolers to supply electric power to a motor.

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